

AMENDMENT TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application. The following listing provides the amended claims with deleted material crossed out and new material underlined to show the changes made.

5 Claims 1-58 (Canceled).

59. (Currently Amended) A method of simulating Euclidean wiring in an integrated circuit layout, said method comprising:

determining a preferred wiring angle for a metal layer of said integrated circuit layout;

10 ~~based on said preferred wiring angle, determining a ratio of wire segment lengths first~~
~~interconnect line length~~ along a first direction to wire segment lengths ~~a second interconnect line~~
~~length~~ along a second direction that is approximately 45 degrees from said first direction to
~~create a simulated Euclidean interconnect line along said preferred wiring angle; and~~

15 ~~routing said metal layer using said preferred wiring angle by creating interconnect wires~~
~~made up of~~ using said ratio to define a set of routes on said metal layer, each route having a first
set of wire segments of said first interconnect line length along said first direction on said metal
layer and a second set of wire segments ~~of said second interconnect line length~~ along said second
direction on said metal layer, such that each route in said set of routes effectively traverses on
said metal layer along said preferred wiring angle.

20 60. (Previously Presented) The method of claim 59 wherein said first direction is
horizontal and said second direction is substantially 45 degrees from said horizontal.

61. (Currently Amended) The method of ~~according to~~ claim 59, wherein the routing
of said metal layer comprises further comprising:

a first route that is formed by connecting wire segments that alternate along said first and second directions, wherein the proportion of the lengths of wire segments along said first direction to the lengths of wire segments along said second direction is approximately equal to said ratio.

5 ~~routing a first interconnect line along said preferred wiring angle by connecting alternating pairs of said first interconnect line length along said first direction and said second interconnect line length along said second direction.~~

62. (Currently Amended) A method of simulating Euclidean wiring in an integrated circuit layout, said method comprising:

10 determining a preferred wiring angle for a metal layer;

based on said preferred wiring angle, determining a ratio of wire segment lengths interconnect line length along a first direction to wire segment lengths interconnect line length along a second direction that is substantially orthogonal to said first direction ~~to create a simulated Euclidean interconnect line along said preferred wiring angle; and~~

15 ~~routing said metal layer using said preferred wiring angle using said ratio to define a set of routes on said metal layer, each route having a first set of wire segments along said first direction on said metal layer and a second set of wire segments along said second direction on said metal layer, such that each route in said set of routes effectively traverses on said metal layer along said preferred wiring angle.~~

20 63. (Original) The method of claim 62 wherein said first direction is horizontal and said second direction is vertical.

64. (Currently Amended) The method of ~~according to claim 62~~ wherein using said proportion to define said set of routes on said metal layer comprises further comprising:

a first route that is formed by connecting wire segments that alternate along said first and second directions, wherein the proportion of the lengths of wire segments along said first direction to the lengths of wire segments along said second direction is approximately equal to said ratio.

5 ~~routing a first interconnect line along said preferred wiring angle by connecting alternating pairs of an interconnect line length along said first direction and an substantially orthogonal interconnect line length along said second direction.~~

65. (Currently Amended) An integrated circuit layout, said integrated circuit layout comprising:

10 a plurality of circuit modules;

 a first interconnect line layer, said first interconnect line layer having a first Manhattan preferred horizontal direction of interconnect lines;

 a second interconnect line layer, said second interconnect line layer having a second Manhattan preferred vertical direction of interconnect lines; and

15 a third interconnect line layer, said third interconnect line layer having a ~~first arbitrary~~ diagonal preferred direction and a set of routes that effectively traverse along said first diagonal preferred direction;

 wherein ~~interconnect lines~~ each particular route in said set of routes on said third interconnect line layer comprises a plurality of alternating ~~interconnect line~~ subsegments that alternate between only two directions, said two directions comprising one of said Manhattan directions and a direction that is 45 degrees with respect to said Manhattan direction; wherein a first subsegment is horizontal and a second subsegment is approximately 45 degrees diagonal to said horizontal; wherein because of a ratio of the lengths of said subsegments along said two

directions, each particular route in said set of routes traverses on said third interconnect line layer effectively along said first diagonal preferred direction.

66. (Currently Amended) The integrated circuit layout as claimed in claim 65, said integrated circuit layout further comprising:

5 a fourth interconnect line layer, said fourth interconnect line layer having a second diagonal preferred direction, said second diagonal preferred direction substantially orthogonal to said first diagonal preferred direction wherein interconnect lines on said fourth interconnect line layer ~~comprises~~comprise a plurality of alternating ~~interconnect line~~ subsegments.

67. (Currently Amended) The integrated circuit layout as claimed in claim 66 wherein
10 said first diagonal preferred direction is approximately forty-five degrees relative to said first Manhattan preferred ~~horizontal~~ direction and said second diagonal preferred direction is approximately negative forty-five degrees relative to said first Manhattan preferred ~~horizontal~~ direction.

68. (Currently Amended) The integrated circuit layout as claimed in claim 66, said
15 integrated circuit layout further comprising:

a fifth interconnect line layer, said fifth interconnect line layer having a ~~second~~ third diagonal preferred direction, said ~~second~~ third diagonal preferred direction substantially orthogonal to said ~~first~~ second diagonal preferred direction wherein interconnect lines on said fifth interconnect line layer comprise a plurality of alternating ~~interconnect line~~ subsegments.

69. (Currently Amended) A method of laying out an integrated circuit, said method
20 comprising:

placing a plurality of circuit modules;

routing a first interconnect line layer, said first interconnect line layer having a first Manhattan preferred ~~horizontal~~ direction of interconnect lines;

routing a second interconnect line layer, said second interconnect line layer having a second Manhattan preferred ~~vertical~~ direction of interconnect lines; and

5 routing a third interconnect line layer, said third interconnect line layer having a first ~~preferred~~ diagonal preferred direction;

wherein ~~interconnect lines on~~ routing said third interconnect line layer comprises using said first diagonal preferred direction to determine a mix of a plurality of alternating interconnect line subsegments that alternate between only two directions, said two directions comprising one
10 of said Manhattan directions and a diagonal direction that is 45 degrees with respect to said one of said Manhattan directions ~~wherein a first subsegment is horizontal and a second subsegment is approximately 45 degrees diagonal to said horizontal.~~

70. (Currently Amended) The method of laying out said integrated circuit layout as claimed in claim 69, said method further comprising:

15 routing a fourth interconnect line layer, said fourth interconnect line layer having a second diagonal preferred direction, said second diagonal preferred direction substantially orthogonal to said first diagonal preferred direction wherein interconnect lines on said fourth interconnect line layer comprise a plurality of alternating ~~interconnect line~~ subsegments.

71. (Currently Amended) The method of laying out said integrated circuit layout as
20 claimed in claim 70, ~~said method~~ wherein said first diagonal preferred direction is approximately forty-five degrees relative to said first Manhattan preferred ~~horizontal~~ direction and said second diagonal preferred direction is approximately negative forty-five degrees relative to said first Manhattan preferred ~~horizontal~~ direction.

72. (Currently Amended) A method of laying out an integrated circuit, said method comprising:

placing a plurality of circuit modules;

routing a first interconnect line layer, said first interconnect line layer having a first

5 Manhattan preferred ~~horizontal~~ direction of interconnect lines;

routing a second interconnect line layer, said second interconnect line layer having a second Manhattan preferred ~~vertical~~ direction of interconnect lines; and

routing a third interconnect line layer, said third interconnect line layer having a first preferred diagonal preferred direction;

10 wherein ~~interconnect lines on~~ routing said third interconnect line layer comprises using said first diagonal preferred direction to determine a mix of a plurality of alternating interconnect line subsegments that alternate between only two directions, said two directions comprising one of said Manhattan directions and a direction that is substantially orthogonal to said one of said Manhattan directions; wherein a first subsegment is horizontal and a second subsegment is
15 substantially orthogonal to said horizontal;

73. (Currently Amended) The method of laying out said integrated circuit layout as claimed in claim 72, said method further comprising:

routing a fourth interconnect line layer, said fourth interconnect line layer having a second diagonal preferred direction, said second diagonal preferred direction substantially
20 orthogonal to said first diagonal preferred direction wherein interconnect lines on said fourth interconnect line layer comprise a plurality of alternating ~~interconnect line~~ subsegments.

74. (Currently Amended) The method of laying out said integrated circuit layout as claimed in claim 73, ~~said method~~ wherein said first diagonal preferred direction is approximately forty-five degrees relative to said first Manhattan preferred ~~horizontal~~ direction and said second diagonal preferred direction is approximately negative forty-five degrees relative to said first
5 Manhattan preferred ~~horizontal~~ direction.

75. (New) A method of wiring an integrated circuit layout, said method comprising:

identifying a preferred wiring angle for a metal layer of said integrated circuit layout;

using said preferred wiring angle to identify a proportion of wire segments along a first direction and wire segments along a second direction; and

10 using said proportion to determine a set of routes on said metal layer, wherein each particular route has a set of wire segments along said first direction and a set of wire segments along said second direction such that the particular route effectively traverses on said metal layer along said preferred wiring angle.

76. (New) The method of claim 75, wherein a ratio of the sum of the lengths of wire
15 segments along said first direction to the sum of the lengths of wire segments along said second direction is approximately equal to said proportion.

77. (New) The method of claim 75, wherein said first direction is horizontal and said second direction is substantially forty-five degrees from said horizontal.

78. (New) The method of claim 75, wherein said first direction is horizontal and said
20 second direction is vertical.

79. (New) The method of claim 75, wherein said first direction is approximately forty-five degrees relative to a horizontal and said second direction is approximately negative forty-five degrees relative to said horizontal.

80. (New) The method of claim 75 further comprising:

5 defining a route along said preferred wiring angle by connecting alternating pairs of wire segments along said first direction and wire segments along said second direction.

81. (New) The method of claim 79, wherein said first direction is approximately 45 degrees from said second direction.

82. (New) The method of claim 79, wherein said first direction is substantially
10 orthogonal to said second direction.